

Software Strategy for the Defense Enterprise

May 2012



Software Engineering Institute

Carnegie Mellon

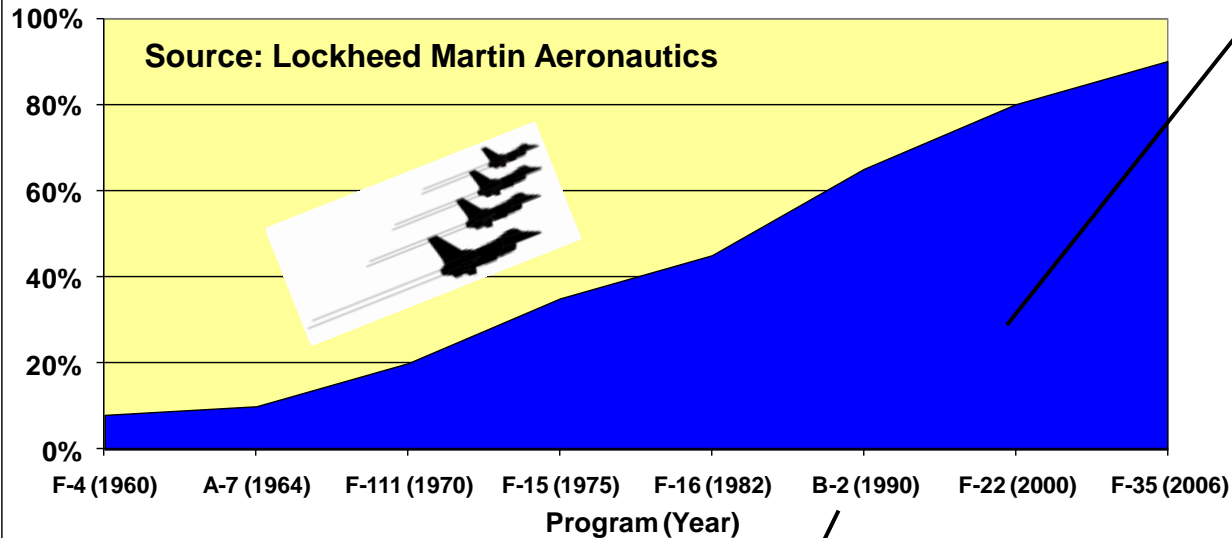
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DoD Software is Growing in Size & Complexity

% of Specification Requirements Involving Software Control

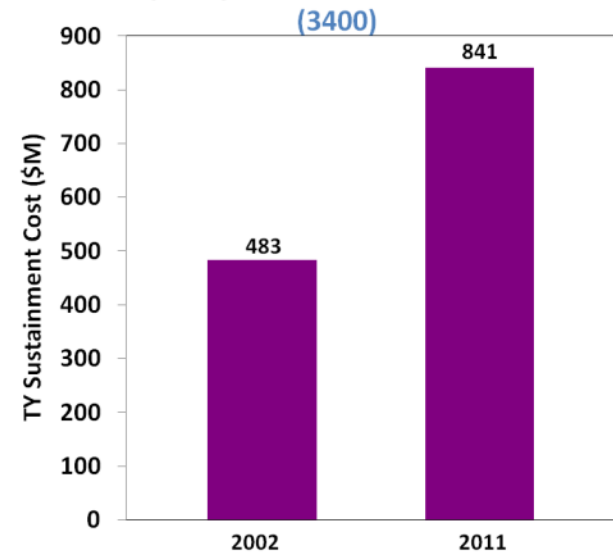
Source: Lockheed Martin Aeronautics



Multi-year delays associated with software & system stability

Software & testing delays push costs above Congressional ceiling

Weapon System SW Sustainment Costs



Source: Air Force Study on Software Sustainment for Legacy Aircraft

"[Software] continues to grow in importance in our weapons systems & remains a significant contributor to program cost, schedule, & performance shortfalls."

– Honorable Pete Aldridge, former USD, AT&L



Critical Code Report (2010)

Highlights

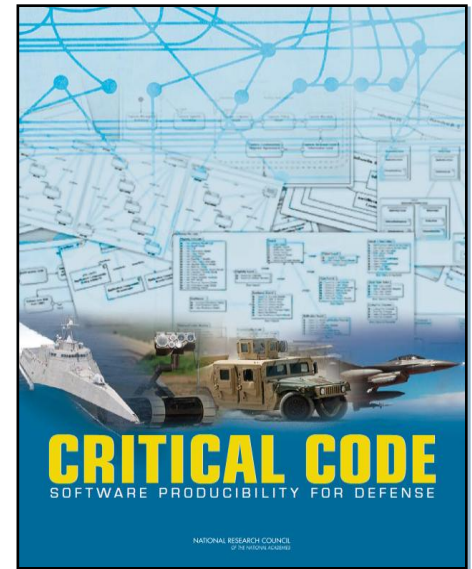
- Finding 1-1: “**Software has become essential** ... its role is continuing to deepen and broaden... This creates both benefits and risks.”
- Finding 2-6: “The DoD has a **growing need for software expertise**, and it is not able to meet this need through intrinsic resources.”
- Recommendation 3-2: “This committee reiterates ...that the DoD follow an **architecture driven acquisition strategy**...”

Improve Current Practice

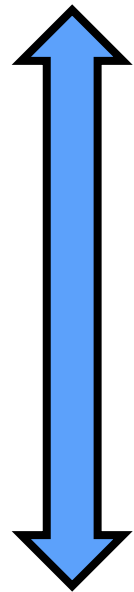
- Enable incremental iterative development at arm’s length
- Enable architecture leadership, interlinking, and flexibility
- Enable mission assurance at scale, with rich supply chains

All information on this slide is from “Critical Code: Software Producibility for Defense” by Committee for Advancing Software-Intensive Systems Producibility, National Research Council (2010), <http://www.nap.edu/catalog/12979.html>

“Software ... is shifting into a more strategic and fundamental role in diverse systems.”



Common Software Acquisition Challenges



	Current Challenges	Future Challenges
Enterprise	<ul style="list-style-type: none">• Achieving real cost reduction through software reuse• Getting and retaining people with the right combination of software engineering <u>and</u> software acquisition expertise.	<ul style="list-style-type: none">• Managing risk of increasingly global supply chain
Program	<ul style="list-style-type: none">• Making system/software engineering decisions to maximize impact at acceptable risk• Role of program office staff in software engineering activities	<ul style="list-style-type: none">• Integrating new software technologies while managing risk

NOTE: These are examples and are not comprehensive



Software Strategy for the Defense Enterprise

What is a Defense Enterprise?

- A collection of defense programs and/or capabilities
- Can be PEO, SYSCOM, competency, etc.

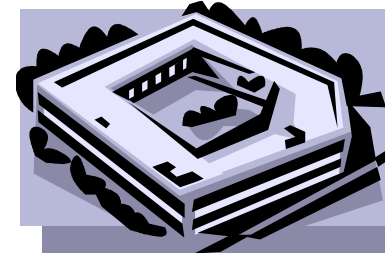
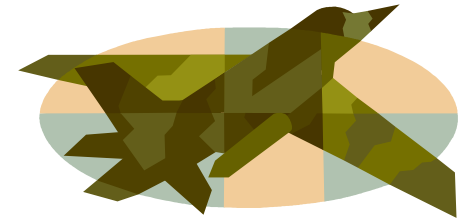
Why is a software strategy needed?

1. Connects top level DoD objectives to the program level
2. DoD budget will limit ability to recover from software activities that are not currently meeting cost/schedule targets
3. Software has an impact across enterprise competencies
4. DoD can leverage from commercial sectors where software IS the strategic/competitive advantage
5. Trends require future capability to cost effectively scale most software engineering/acquisition activities
6. More...



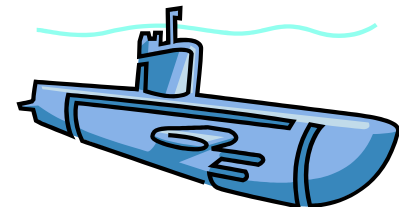
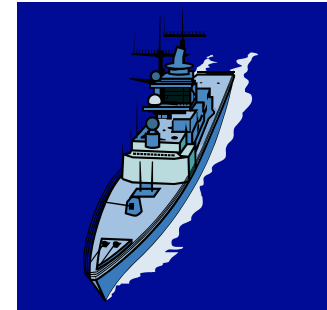
Elements of a Software Strategy - 1

1. Align software activities to the mission
2. Identify sponsor/owner for software leadership across the organization
3. Identify metrics and track status of software use in the enterprise
4. Enable and track coordination across programs to accomplish enterprise software objectives
5. Provide mechanisms for sharing lessons learned to develop an organizational memory and improve current practices



Elements of a Software Strategy - 2

6. Look across competencies for impact of software challenges
7. Identify future capability needs/targets to sponsor pilots
8. Identify technologies that require research and enable partnerships with industry, government and academia
9. Build and maintain executive and team awareness of importance of software to the mission
10. Align training resources with the growing/changing needs of software expertise in the enterprise



Summary

Software is the primary mechanism for deployment of DoD capability

Software challenges cut across the defense enterprise

An enterprise strategy is needed to align resources to meet growing challenges/threats



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Aligning Software Activities to the Mission

